

ADJUSTABLE DISPERSION COMPENSATORS, ADJUSTABLE OPTICAL
FILTERS, AND CONTROL SIGNALS AND STRAIN APPLICATORS THEREFOR

ABSTRACT OF THE INVENTION

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The present specification describes strain applicators, incorporating two actuators having different actuation characteristics acting in cooperation, and their use in adjustable optical filters and adjustable dispersion devices (such as compensators) to controllably strain fibre Bragg gratings to alter their reflectance characteristics. Preferred examples of the strain applicators are hybrids of a fast response actuator with a slower device, and provide a wide overall range of adjustment with fast response tuning within that range.

The strain applicators are used to provide dither, in particular to provide both in-phase and anti-phase dither of the strains applied to FBGs in a twin-grating compensator. The in-phase dithering enables centering on an incoming signal to be performed and the out of phase dithering dithers the dispersion, enabling the compensator to track changes in dispersion rapidly, using an appropriately arranged control loop.

An improved method of extracting a dispersion error signal from optical signals is also described, based on a simplified spectral analysis of data carried by the signals.